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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/730,051

12/09/2003

Hyung-Bac Lee

1572.1254

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7590

06/04/2007

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EXAMINER

PERVAN, MICHAEL

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

06/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/730,051

Applicant(s)

LEE, HYUNG-BAE

Examiner

Michael Pervan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :12/9/03 6/22/04
1/5/06 11/27/06.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Houston (US 6,891,528).

In regards to claim 1, Houston discloses a keyboard comprising a plurality of keys marked with symbols (Fig. 1), a frame to settle the plurality of keys thereon (col. 2, line 60-col. 3, line 3; the frame (top surface of the keyboard) holds the keys in their positions), and a key signal input plate disposed under the frame and generating a specific signal corresponding to the key when touched with the key (col. 3, lines 23-36), the key comprising:

a key body having a combining part combined to the frame (Fig. 2 and col. 2, line 60-col. 3, line 3; the combining part (flexible legs 210, 212 and feet 218, 220) are combined to the frame (top surface 206));

a key cap combined to a first part of the key body and marked with a predetermined symbol (col. 2, lines 60-61);

a base pin protruding from a second part of the key body and touching the key signal input plate so as to let the key signal input plate sense that the key is operated (Fig. 2, col. 3, lines 6-36 and col. 3, lines 53-65; base pin (metallic pins 224) protrude

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from key body and make contact with signal plate (switch matrix unit), which indicates a key has been activated); and

at least one identification pin spaced from the base pin and touching or not touching the key signal input plate so as to output the specific signal corresponding to the symbol (Fig. 2, col. 3, lines 6-36 and col. 3, lines 53-65; identification pin (metallic pins 224) out put a specific signal (binary signal) corresponding to the symbol).

In regards to claim 22, Houston discloses a keyboard comprising:

a case (col. 2, lines 60-62; the case (top surface of keyboard));

a plurality of keys arranged in the case in a predetermined pattern (col. 2, line 60-62), wherein each key has identifiers that correspond to a predetermined symbol marked on each key (col. 3, lines 6-22);

a key signal input plate, disposed in the case, having receivers corresponding to each key, wherein the receivers output signals in response to the identification means corresponding to each key (col. 3, lines 53-65; receivers (capacitive devices) output signals (binary signal) in response to identification means corresponding to each key).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-21 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houston et al.

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In regards to claim 2, Houston does not disclose the keyboard according to claim 1, wherein the base pin is longer than the identification pin.

However, Houston discloses all the pins being the same length (Fig. 2; pins 224).

Since, there is no benefit or advantage to having the base pin longer than the identification pin described in the specification, it would be obvious to one of ordinary skill in the art to either have all the pins be the same length or have a base pin be longer than the remaining pins based on a designer's choice.

In regards to claim 3, Houston does not disclose the keyboard according to claim 2, wherein the maximum number of the identification pins is seven.

However, Houston discloses maximum of eight identification pins (col. 3, lines 13).

Since, there is no benefit or advantage to choosing seven identification pins described in the specification, it would have been obvious to one of ordinary skill in the art to either have eight identification pins or seven identification pins based on a designer's choice.

In regards to claim 4, Houston discloses the keyboard according to claim 3, wherein the identification pins are disposable in all possible combinations of positions except a position of the base pin so as to output the specific signal corresponding the symbol (col. 3, lines 6-22).

Houston does not disclose the base pin and the at least one identification pins are disposable in positions that correspond to a 2 by 4 matrix.

However, Houston discloses the pins are disposable in a 3 by 3 matrix (Fig. 3).

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Since, there is no benefit or advantage to choosing a 2 by 4 matrix⁸ described in the specification, it would have been obvious to one of ordinary skill in the art to either have a 2 by 4 matrix or a 3 by 3 matrix based on a designer's choice.

In regards to claim 5, Houston discloses the keyboard according to claim 4, wherein on the key signal input plate are provided sectors each having a sensor to be touched with the base pin or the at least one identification pin, forming matrices (col. 3, lines 23-36).

In regards to claim 6, Houston discloses the keyboard according to claim 5, wherein the key covers at least eight sectors on the key signal input plate, corresponding to the 2 by 4 matrix position layout combination of the base pin and the at least one identification pin of each key (col. 3, lines 53-61).

In regards to claim 7, Houston discloses the keyboard according to claim 6, wherein the key cap has a size being large enough to cover the sectors provided on the key signal input plate, wherein the number of sectors is a multiple of eight (Figs. 2-4 and col. 3, lines 53-61).

In regards to claim 8, Houston discloses a keyboard comprising:

a plurality of keys, wherein each key has an arrangement of pins that correspond to a predetermined symbol marked on each key (col. 3, lines 6-22);

a frame that each key detachably links with to maintain a chosen position (col. 2, line 60-col. 3, line 3; each key detachably links to the frame (top surface of the keyboard)); and

a key signal input plate, disposed in the frame, having a plurality of sector blocks corresponding to each key, wherein each sector block outputs signals in response to the arrangement of pins on each key (col. 3, lines 53-65).

Houston does not disclose a case, a frame, disposed in the case, and a key signal input plate, disposed in the frame.

However, Houston discloses a frame and a key signal input plate, disposed in the frame (col. 2, line 60-col. 3, line 3 and col. 3, lines 53-65; since the pins make contact with the signal plate below, it must be disposed within the frame).

Since, there is no benefit or advantage to having a case, a frame, disposed in the case, and a key signal input plate, disposed in the frame described in the specification, it would have been obvious to one of ordinary skill in the art to either have a case, a frame, disposed in the case, and a key signal input plate, disposed in the frame or a frame and a key signal input plate, disposed in the frame based on a designer's choice.

In regards to claim 9, Houston discloses the keyboard as in claim 8, wherein the keys are relocatable as desired on the frame wherein the key retains a symbol identity based on the pin arrangement of the key (col. 2, line 60-col. 3, line 3 and col. 3, lines 6-22).

In regards to claim 10, Houston discloses the keyboard as in claim 9, wherein some of the keys have different size and shape tops relative to the other tops of the other keys (Fig. 1).

In regards to claim 11, Houston discloses the keyboard as in claim 8, wherein the arrangement of pins of each key includes a base pin at a set location to indicate

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actuation of the key (col. 3, lines 6-22; all the pins of each key are base pins (metallic studs or pins), since they are in set locations to identify each key and indicate actuation of each key when the pins come into contact with the key signal input plate (switch matrix unit)) and any remaining arrangement of pins indicate the symbol identity of that key (col. 3, lines 6-22).

In regards to claim 12, Houston does not disclose the keyboard as in claim 11, wherein the pins are arrangeable in a 2 by 4 matrix pattern.

However, Houston discloses the pins arrangeable in a 3 by 3 matrix pattern (Fig. 3).

Since, there is no benefit or advantage to choosing a 2 by 4 matrix described in the specification, it would have been obvious to one of ordinary skill in the art to either have a 2 by 4 matrix or a 3 by 3 matrix based on a designer's choice.

In regards to claim 13, Houston does not disclose the keyboard as in claim 11, wherein the base pin is longer than any other pins in the arrangement on the bottom of each key.

However, Houston discloses all the pins having the same length (Fig. 2; pins 224)

Since, there is no benefit or advantage to having the base pin longer than any other pin described in the specification, it would have been obvious to one of ordinary skill in the art to either have all the pins be the same length or a base pin longer than the remaining pins based on a designer's choice.

In regards to claim 14, Houston discloses a keyboard having keys that may be relocated to positions that do not correspond to a QWERTY layout comprising (col. 2, lines 56-60; the position of the keys are transparent, therefore, they can be relocated to positions that do not correspond to a QWERTY layout):

a plurality of keys each having a key cap, a key body, and an arrangement of at least one pin on the bottom of the key body (col. 2, line 60-22),

a frame having a plurality of apertures sized to link with key body (col. 2, lines 60-65);

a key signal input plate disposed under the frame and having a plurality of sector blocks corresponding to each aperture, wherein each sector block includes a plurality of sensors that output signals in response to the arrangement of pins on the bottom of each key (col. 3, lines 53-65); and

Houston does not disclose a case that houses the frame, key signal input plate and the keys.

However, Houston discloses a frame that houses the key signal input plate and the keys (col. 2, line 60-col. 3, line 3 and col. 3, lines 53-65; since the pins make contact with the signal plate below, it must be disposed within the frame).

Since, there is no benefit or advantage to having a case that houses the frame, key signal input plate and the keys described in the specification, it would have been obvious to one of ordinary skill in the art to either have a case that houses the frame, key signal input plate and the keys or a frame that houses the key signal input plate and the keys based on a designer's choice.

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In regards to claim 15, Houston discloses the keyboard as in claim 14, wherein the key caps are not all the same size and shape (Fig. 1).

In regards to claim 16, Houston discloses the keyboard as in claim 15, wherein each key cap is marked with a predetermined symbol (col. 2, lines 60-61) and the arrangement of the at least one pin uniquely corresponds to the predetermined symbol (col. 3, lines 6-22).

In regards to claim 17, Houston discloses the keyboard as in claim 15, wherein the keys may be moved to different locations on the frame (col. 2, line 60-col. 3, line 3) and whereby the key retains its symbol identity based on the pin arrangement on the bottom of the key (col. 3, lines 6-22).

In regards to claim 18, Houston discloses the keyboard as in claim 17, wherein the arrangement of pins of each key includes a base pin at a set location to indicate actuation of the key (col. 3, lines 6-22; all the pins of each key are base pins (metallic studs or pins), since they are in set locations to identify each key and indicate actuation of each key when the pins come into contact with the key signal input plate (switch matrix unit)) and any remaining arrangement of pins indicate the symbol identity of that key (col. 3, lines 6-22).

In regards to claim 19, Houston does not disclose the keyboard as in claim 18, wherein the base pin is longer than any other pins in the arrangement on the bottom of each key.

However, Houston discloses all the pins being the same length (Fig. 2; pins 224)

Since, there is no benefit or advantage to having the base pin longer than any other pin described in the specification, it would have been obvious to one of ordinary skill in the art to either have all the pins being the same length or a base pin longer than the remaining pins based on a designer's choice.

In regards to claim 20, Houston discloses the keyboard as in claim 14, wherein the sensors are arranged in a matrix pattern that is a multiple of eight (col. 3, lines 23-36 and 53-65).

In regards to claim 21, Houston discloses the keyboard as in claim 14, wherein the each sector block of the key signal input plate is comprised of eight sensors that correspond to a maximum of eight pins on each key (col. 3, lines 53-65).

In regards to claim 23, Houston discloses the keyboard as in claim 22, detachably linking each key to maintain the each key in a chosen position (col. 2, line 60-col. 3, line 3).

Houston does not disclose wherein a frame is disposed in the case.

However, Houston discloses just a frame (col. 2, lines 60-63; frame (top surface of keyboard)).

Since, there is no benefit or advantage to having a case and a frame, disposed in the case, it would have been obvious to one of ordinary skill in the art to either have just a frame or a frame disposed in a case based on a designer's choice.

In regards to claim 24, the keyboard as in claim 22, wherein the identifiers are comprising a unique arrangement of pins on each key that correspond to the predetermined symbol (col. 3, lines 6-22).

In regards to claim 25, the keyboard as in claim 22, wherein the receivers further comprise individual sensors to sense the arrangement of the pins (col. 3, lines 53-65; receivers (capacitive devices) comprise individual sensors (R_1-C_2 to R_8-C_2) to sense the arrangement of the pins (binary signal)).

Response to Arguments

5. Applicant's arguments filed March 13, 2007 have been fully considered but they are not persuasive.

Applicant (on page 7 of argument) argues that Houston does not suggest a base pin or at least one identification pin spaced from the base pin. Examiner respectfully disagrees.

Firstly, the claims do not recite that the base pin and the identification pin cannot be one in the same. They just recite that at least one identification pin be spaced from the base pin, which would be an identification pin. Therefore since all of the pins make contact with the key signal input plate (switch matrix unit) indicating a key has been input, any of the pins could be considered a base pin. As long as there is at least one identification pin spaced from the base pin, Houston would read on the claim.

Applicant (on page 8 of argument) argues that the use of Designer's choice is improper. Examiner respectfully disagrees.

The paragraph noted by the applicant only gives a reason for having a base pin longer than the identification pins. However, it does not give a benefit or an advantage to a base pin longer than the identification pins. Therefore since Houston operates equivalently, this limitation is a mere design choice. For example, once a key is

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pressed in the present application the base pin makes contact with the key signal input plate then the identification pins make contact. In Houston, each pin makes contact with the key signal input plate (switch matrix unit) at the same time, which is the equivalent of when the identification pins of the applicant make contact because the base pin would still be in contact as well.

As for claims 8 and 14, it is well known that keyboards have cases with frames within that the keys can be attached to and detached from. Therefore, it would be a mere design choice to implement such a design into Houston.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art (Wolf et al US 5,668,358) is deemed relevant since it discusses a reconfigurable keyboard.

The art made of record and not relied upon is considered pertinent to applicant's disclosure. The art (Rudd et al. US 6,912,126) is deemed relevant since it discusses personalizing an electrical device.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP
May 22, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

